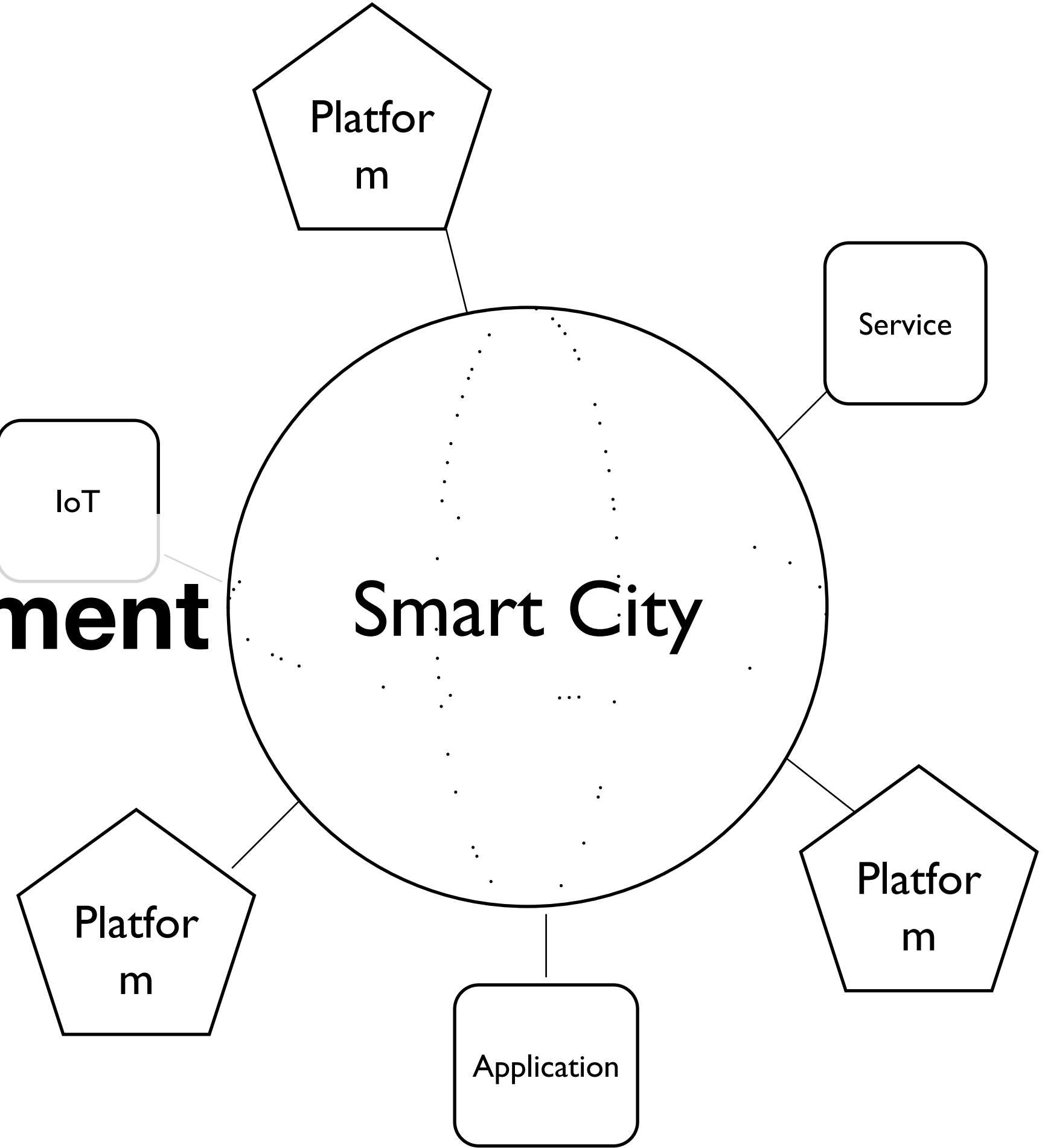# How to make Data-driven Development

Jong-Sung Hwang

Lead Researcher, National Information Society Agency
Former Master Planner, National Pilot Smart City
Former CIO, Seoul Metropolitan Government

Platform

Service

IoT

Smart City

Platform

Platform

Application

Data is Key to Digital Transformation

The increased consumption of data, especially shared data,
has fueled the digital transformation
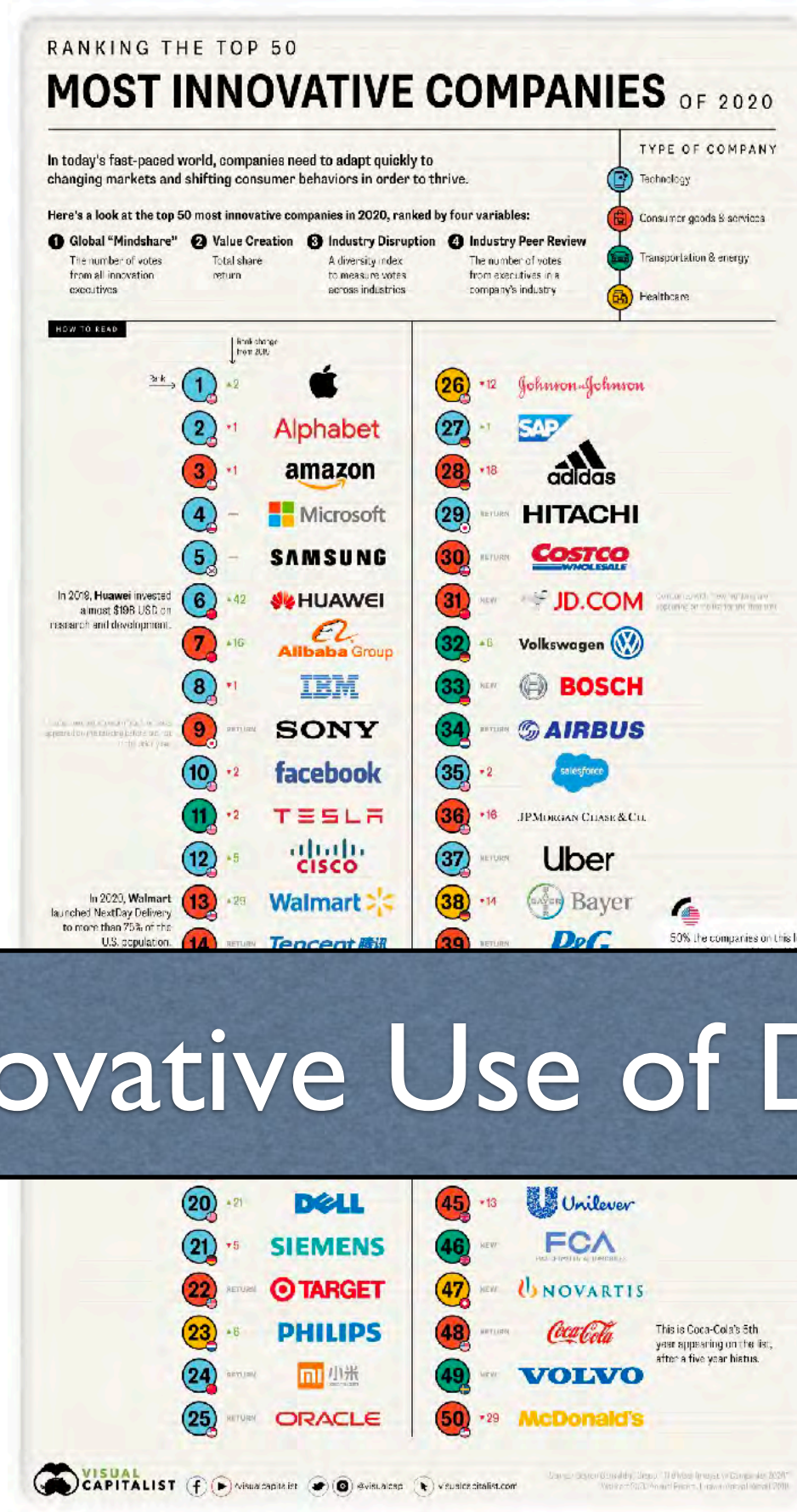
Innovative Use of Data

Unique Data : Replicated Data

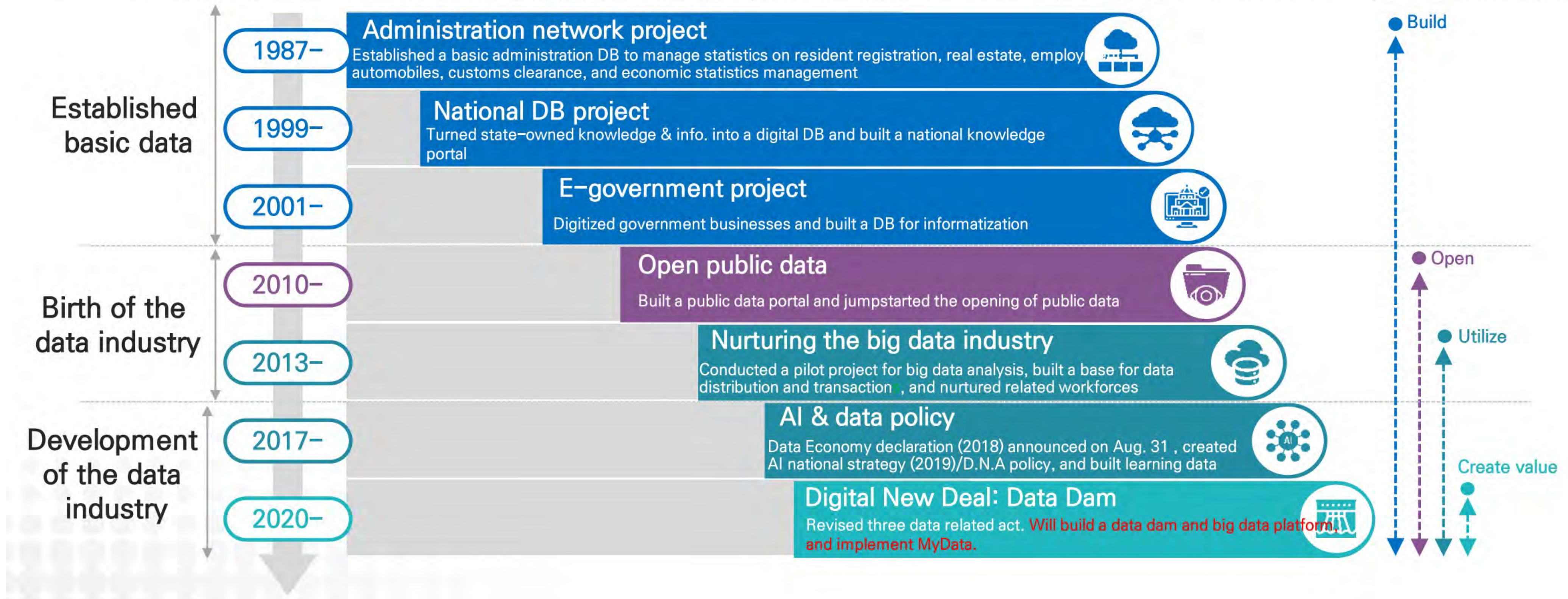|	
2020	1:9
↓	↓
2024	1:10

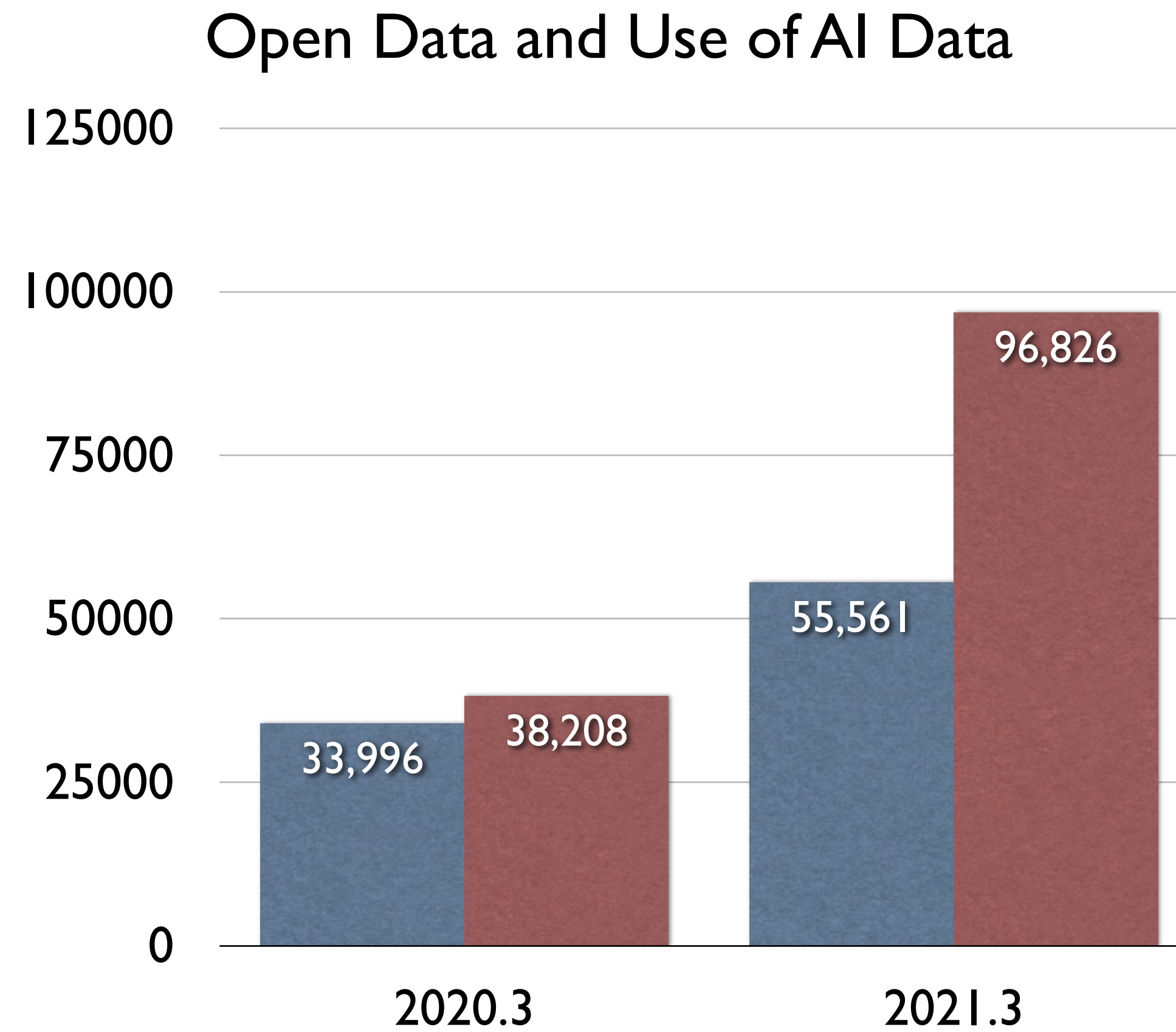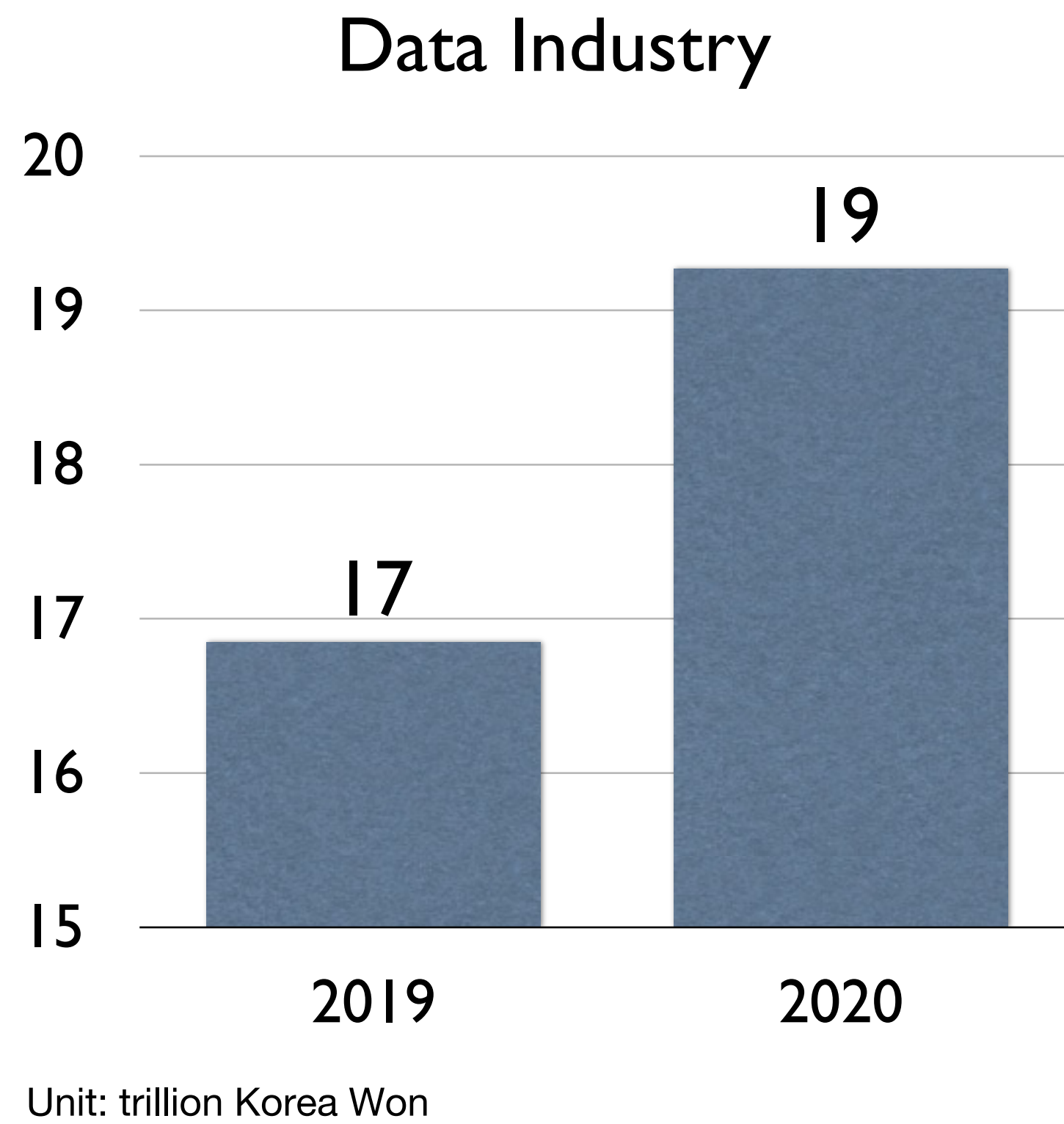Sharing and reuse of data enables digital
transformation

Korea's Data Strategy
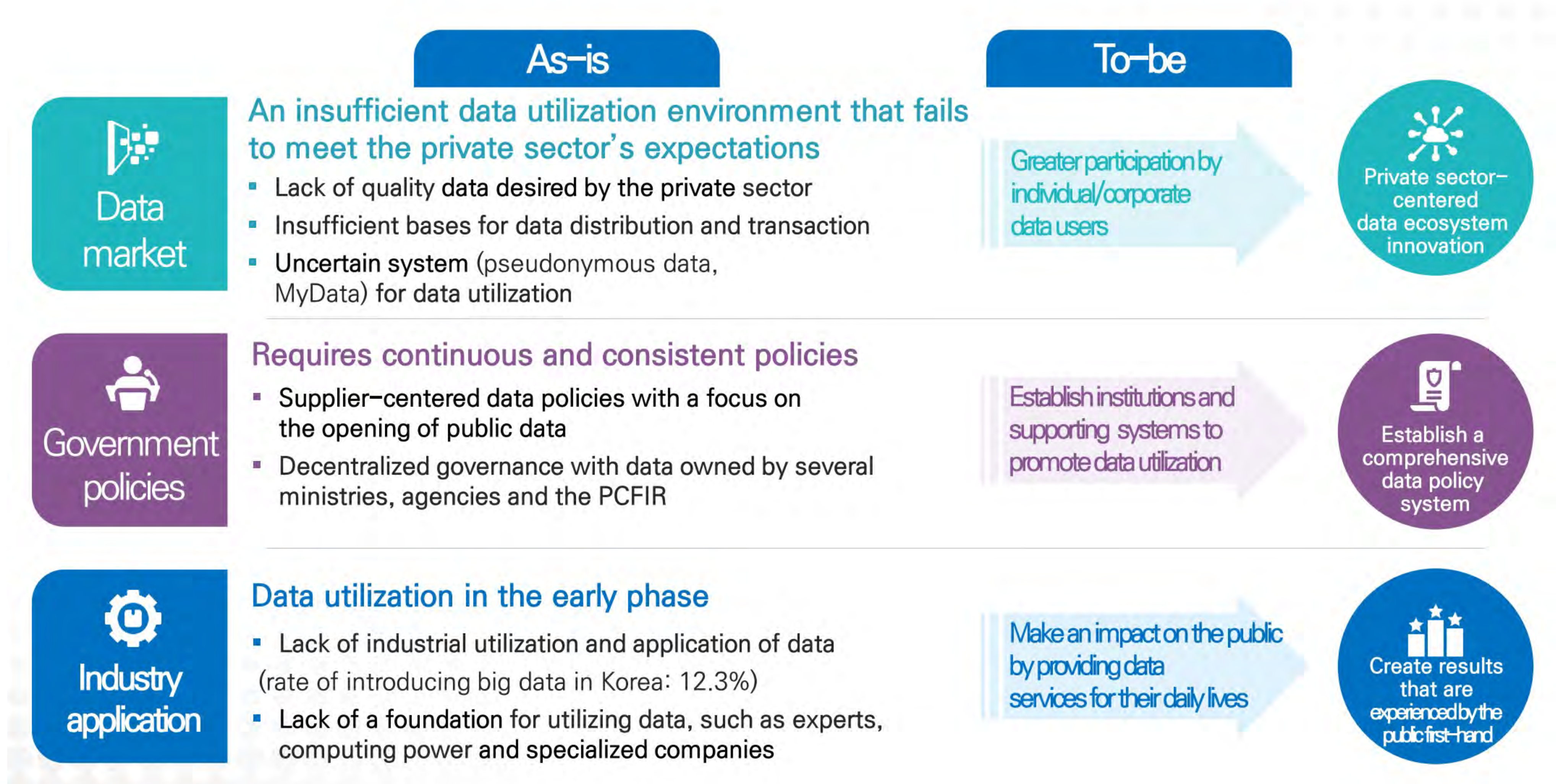
History of Data Policies

- Along with technological and industrial changes, the government's data policies have evolved from establishing a database to **opening data to data utilization and value creation from data**

Established basic data

1987–	**Administration network project** Established a basic administration DB to manage statistics on resident registration, real estate, employ, automobiles, customs clearance, and economic statistics management
1999–	**National DB project** Turned state-owned knowledge & info. into a digital DB and built a national knowledge portal
2001–	**E-government project** Digitized government businesses and built a DB for informatization

Birth of the data industry

| 2010– | **Open public data**
Built a public data portal and jumpstarted the opening of public data |
| 2013– | **Nurturing the big data industry**
Conducted a pilot project for big data analysis, built a base for data distribution and transaction , and nurtured related workforces |

Development of the data industry

| 2017– | **AI & data policy**
Data Economy declaration (2018) announced on Aug. 31 , created AI national strategy (2019)/D.N.A policy, and built learning data |
| 2020– | **Digital New Deal: Data Dam**
Revised three data related act. Will build a data dam and big data platform, and implement MyData. |

- Build
- Open
- Utilize
- Create value

Key Achievements of Data Policies

Data Industry

Unit: trillion Korea Won

Open Data and Use of AI Data

- ■ Public Open Data
- ■ Use of AI Learning Data

Self-Assessment of Korea's Data Economy

	As-is	To-be	

Data market

An insufficient data utilization environment that fails to meet the private sector's expectations
- Lack of quality data desired by the private sector
- Insufficient bases for data distribution and transaction
- Uncertain system (pseudonymous data, MyData) for data utilization

Greater participation by individual/corporate data users →

Private sector–centered data ecosystem innovation

Government policies

Requires continuous and consistent policies
- Supplier–centered data policies with a focus on the opening of public data
- Decentralized governance with data owned by several ministries, agencies and the PCFIR

Establish institutions and supporting systems to promote data utilization →

Establish a comprehensive data policy system

Industry application

Data utilization in the early phase
- Lack of industrial utilization and application of data
(rate of introducing big data in Korea: 12.3%)
- Lack of a foundation for utilizing data, such as experts, computing power and specialized companies

Make an impact on the public by providing data services for their daily lives →

Create results that are experienced by the public first-hand

" Korea Data 119 Project "

11 Tasks

Private sector-centered ecosystem innovation

① Open previously unavailable key data
② Secure a level of data quality as requested by data users
③ Utilize private specialized companies and provide support for data purchase
④ Connect data platforms and vitalize data transaction platforms

Establish a comprehensive data policy system

⑤ Overhaul the national data management system
⑥ Redesign government activities to be data-centered
⑦ Stabilize new data utilization systems early on
⑧ Proactively respond to risks in the overall data ecosystem
⑨ Build a data- and science-based scientific disaster management system

-------------------- Special Tasks --------------------

⑩ Implement a COVID-19 time-capsule project
⑪ Develop an integrated water management data system

9 Services

Create results that allow the public experience first-hand

Medicine
① Personal health information in one place
② Automated private insurance claims

Life
③ Smart consumption
④ Counterfeit detection

Welfare
⑤ Continuous meal program for children
⑥ AI learning assistance

Key Foundation
⑦ AI Hunminjeongeum
⑧ K-Image Project
⑨ Smart ports

NIA NATIONAL INFORMATION SOCIETY AGENCY

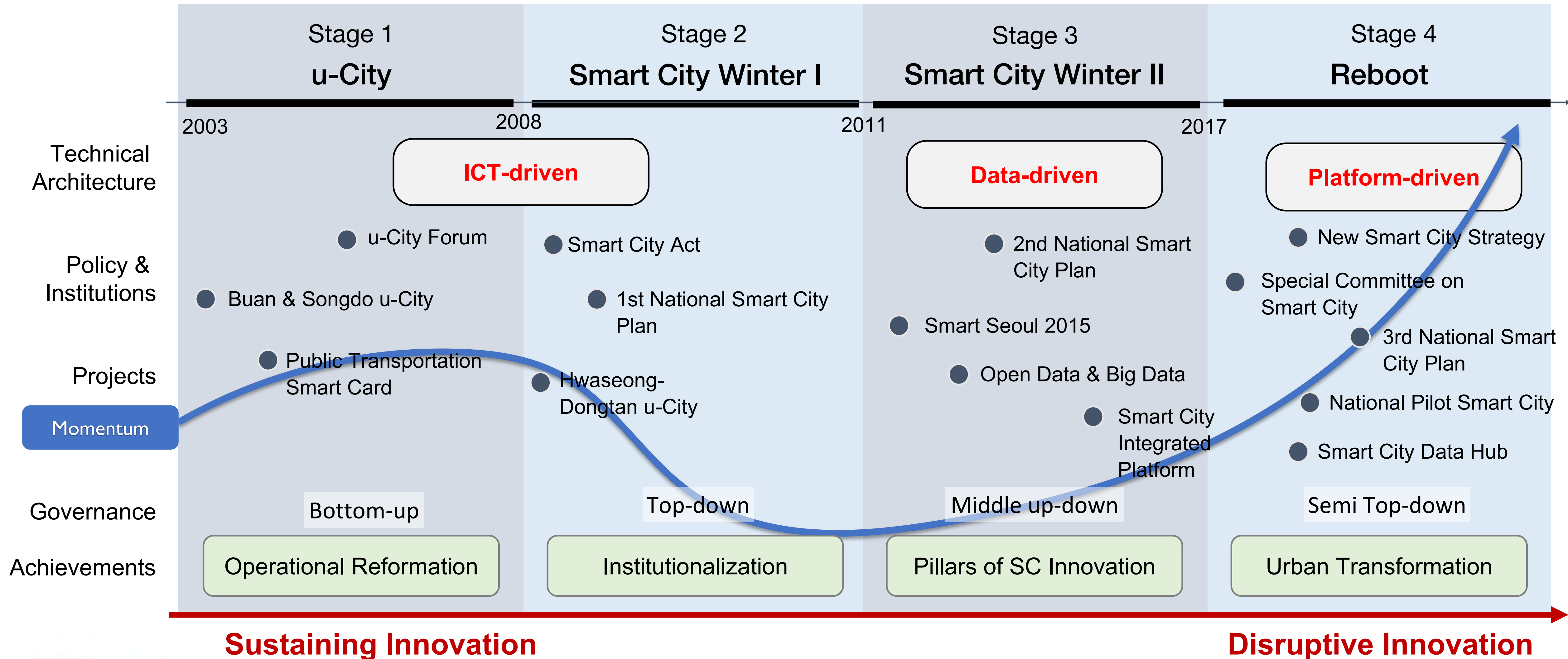# National Data Strategy for the Future?

Data Idealism   vs   Data Realism

---

① Data Sharing, ② Data Quality & Ethics, ③ Data Governance

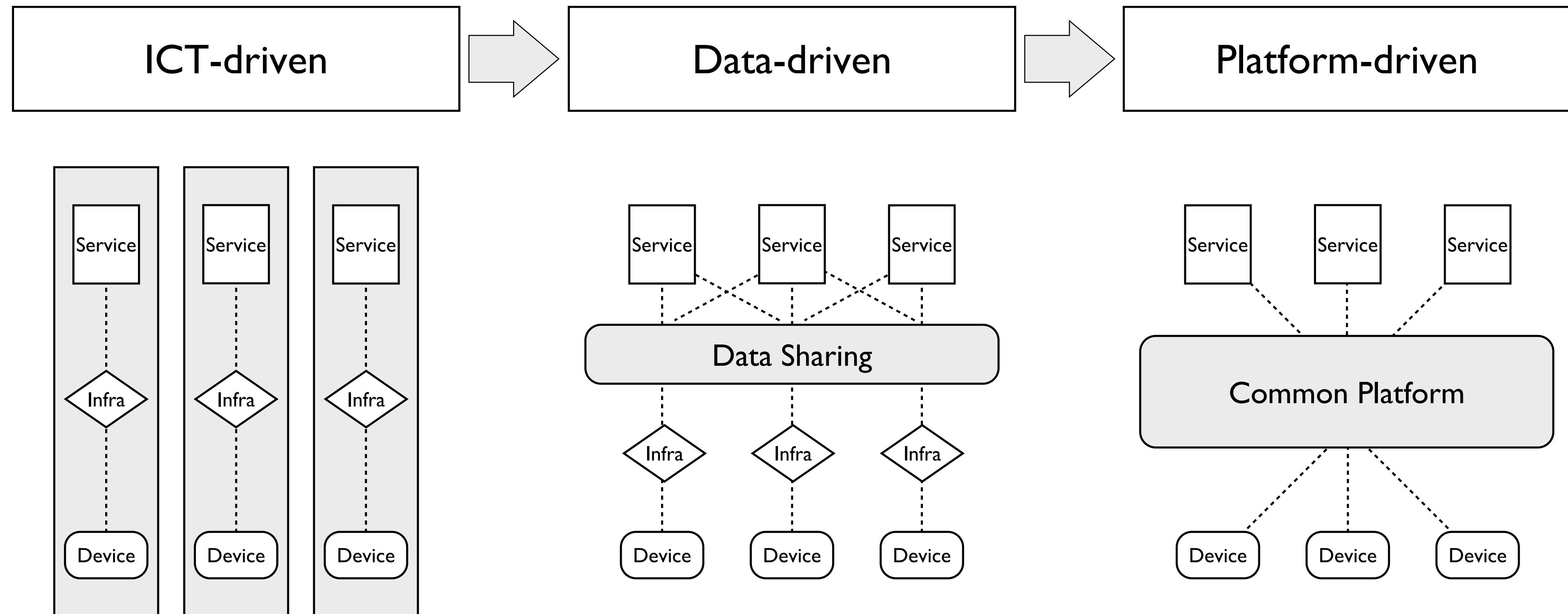Data Sharing is important, but it doesn't happen naturally

Ainsley Seago.

Development of Korea's Smart Cities and Data Approaches

	Stage 1 **u-City**	Stage 2 **Smart City Winter I**	Stage 3 **Smart City Winter II**	Stage 4 **Reboot**
	2003	2008	2011	2017
Technical Architecture		**ICT-driven**	**Data-driven**	**Platform-driven**
Policy & Institutions	u-City Forum / Buan & Songdo u-City	Smart City Act / 1st National Smart City Plan	2nd National Smart City Plan / Smart Seoul 2015	New Smart City Strategy / Special Committee on Smart City
Projects	Public Transportation Smart Card	Hwaseong-Dongtan u-City	Open Data & Big Data / Smart City Integrated Platform	3rd National Smart City Plan / National Pilot Smart City / Smart City Data Hub
Governance	Bottom-up	Top-down	Middle up-down	Semi Top-down
Achievements	Operational Reformation	Institutionalization	Pillars of SC Innovation	Urban Transformation

Momentum

Sustaining Innovation   **Disruptive Innovation**

NIA NATIONAL INFORMATION SOCIETY AGENCY

Development of Data Sharing Approaches

Pillars of Data Economy (Case of Smart City)

Data Center & Analytics	Smart City Platforms	Open Innovation Ecosystem

Data Center & Analytics

- City Data Centers (2004~)
- National Data Centers (2005~)
- Big Data based Innovations (2011~)
- Urban Data Lake (S-Data in Seoul)
- Big Data Platforms (2019~)

Smart City Platforms

- GIS Data Hub
- Integrated Smart City Platform for CCTVs (2015~)
- Smart City IoT Validation in Busan (2015~2017)
- Smart City Data Hub R&D (2018~)
- Digital Twin Projects (2019~)

Open Innovation Ecosystem

- Public Open Data
- Big Data Campus
- Regular Sandbox

Transportation Card (Seoul)

Information on Crowdedness of Public Transportations

Integrated Platform for Monitoring and Control

(TO-BE) Platform based Connection

(AS-IS) N to N Connection
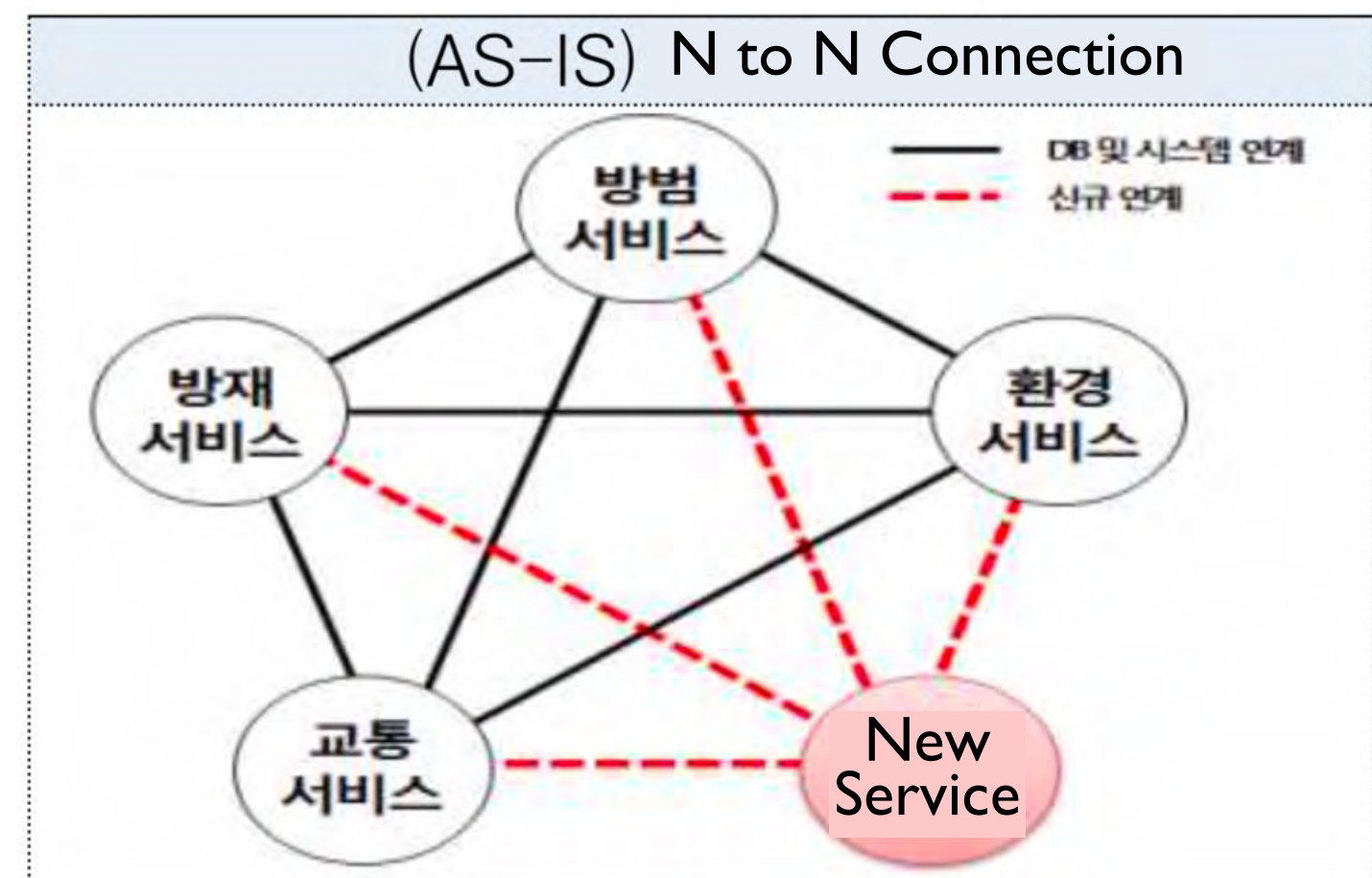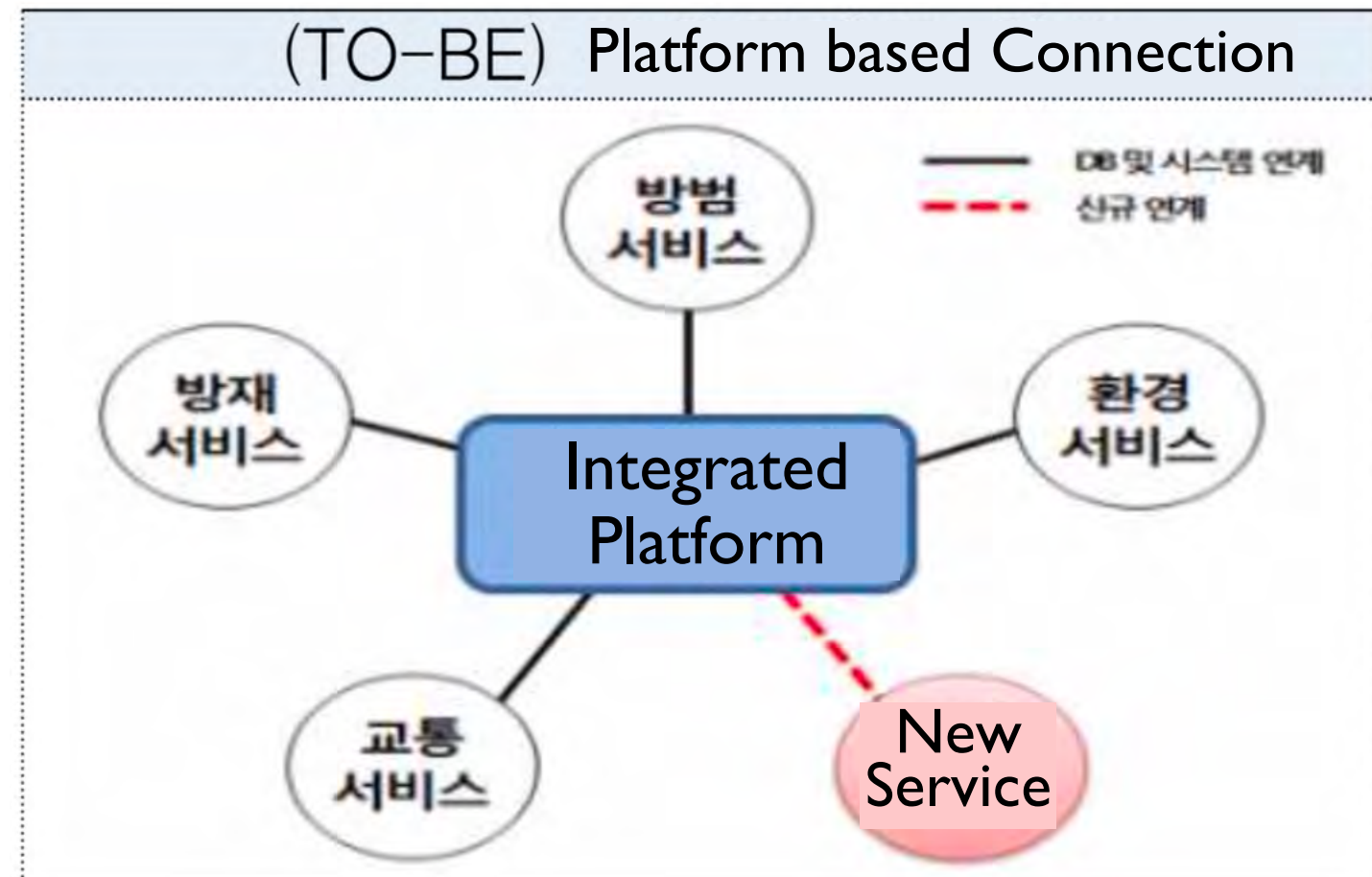
5 integrated services

- 112(police call center) video share
- 112 emergency dispatch support
- 119(fire call center) dispatch support
- Disaster information support
- Children & Dementias protection

Platform is the Core of Data Economy

Types for Platforms

|	System-specific	System-agnostic
Open	Android OS One M2M (IoT platform, EU)	Internet **Platform Interoperability**
Closed	iOS, Amazon Smart City Data Hub (Korea)	Telecommunication Geospatial Data

GAIA-X is one of the best references for National Data Platform
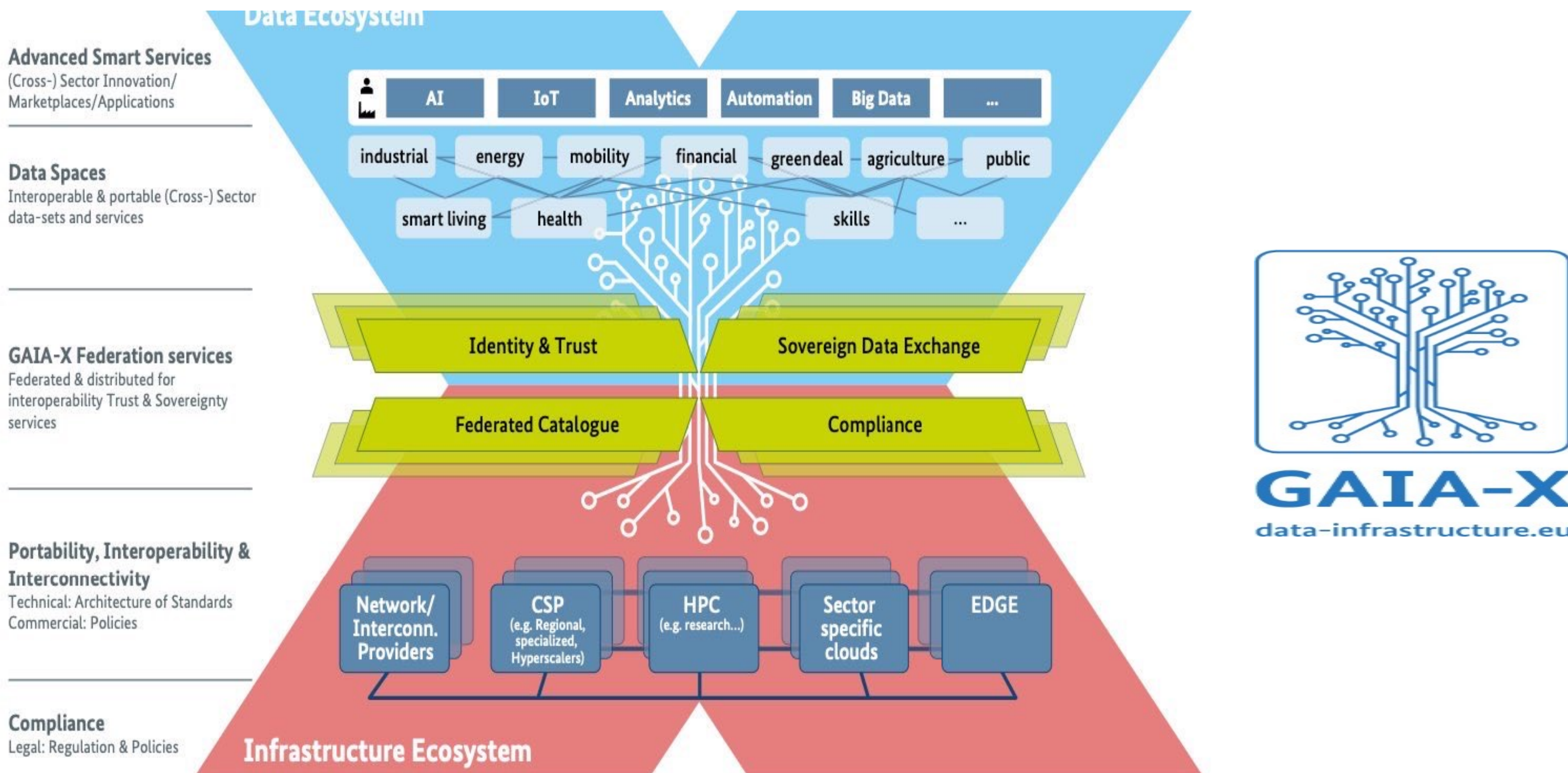
BMWi(2020), GAIA-X: Technical Architecture.

What we are preparing for?
National Intelligence Infrastructure

Mega-Testbed
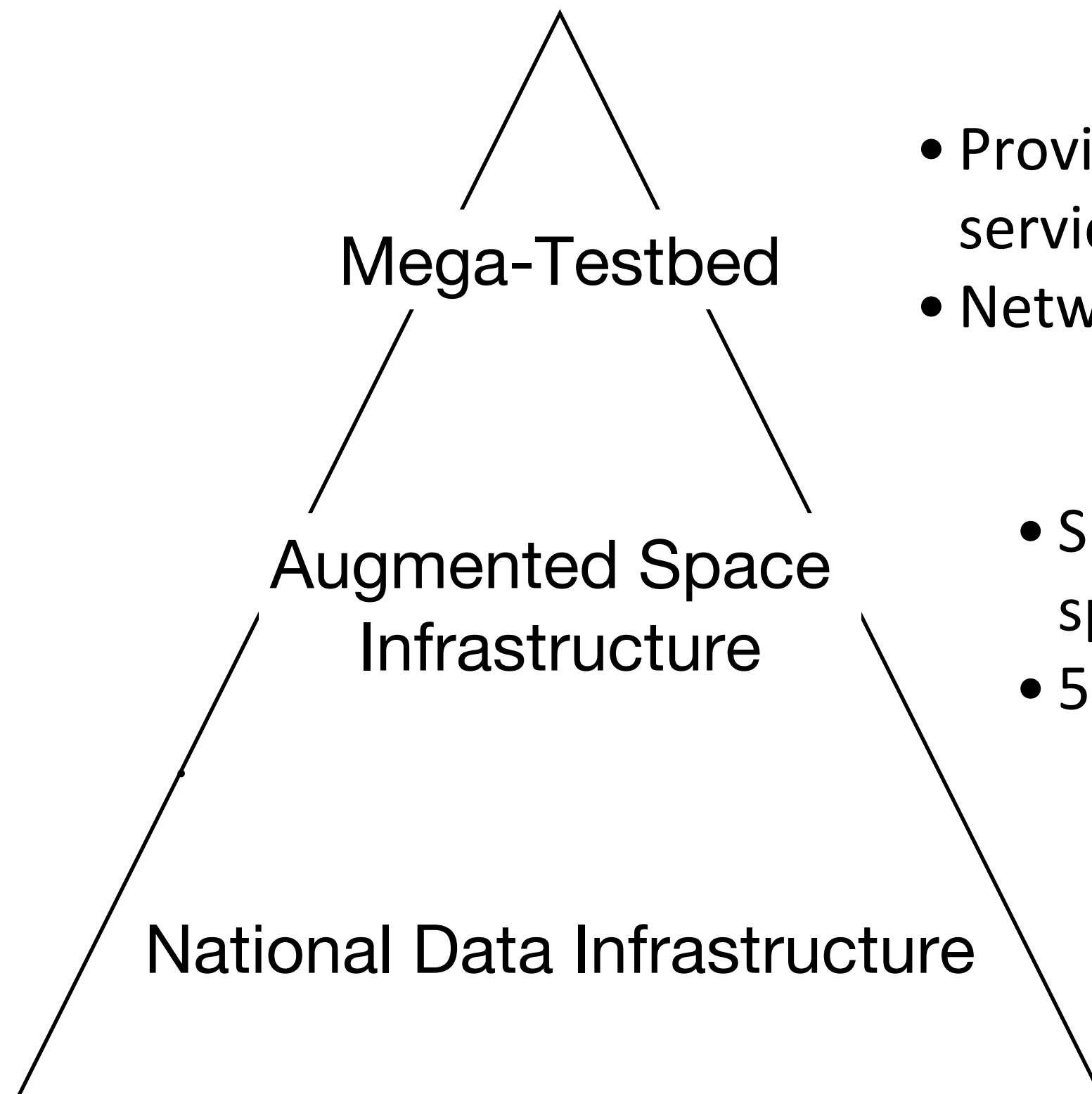
- Providing development spaces for intelligent and augmented services
- Networking testbeds

Augmented Space
Infrastructure

- Supporting the use of emerging technologies in the real space
- 5G, Wifi, Digital Twin, Robot Infra, Smart Infrastructure …

National Data Infrastructure

- Enabling to connect different platforms nationwide
- Similar to US NIST's PPI, EU's GAIA-X

Thank you

Hwang, Jong-Sung, Ph.D.

Lead Researcher at National Information Society Agency

js.goodworld@gmail.com